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ABSTRACT

Computer Assisted Instruction (CAI) is, quite simply, an instance in which instructional content activities are delivered via a computer. Many commercially-available software programs, although excellent programs, may not be acceptable for each individual teacher's classroom. One way to insure that software is not only acceptable but also targets a teacher's class in a specific way, is for instructors to design their own software. The HyperCard authoring system is a computer program that enables teachers, even those with minimal programming ability, to easily design their own hypermedia software programs for use in individualized situations. Teachers now have an easy method to teach, drill, remediate, or even test individual classes or students by designing software that targets these classes or individuals. This paper discusses setting up to design or create a software program; designing the software; adding buttons, fields and graphics to the stack/program; and scripting in HyperCard. (Author/AEF)

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Design Your Own Instructional Software: It's Easy.

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

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Abstract: Computer Assisted Instruction (CAI) is, quite simply, an instance in which instructional content activities are delivered via a computer. Many commercially-available software programs, although excellent programs, may not be acceptable for each individual teachers classroom.

One way to insure that software is not only acceptable but also targets a teacher's class in a specific way, is for instructors to design their own software. The HyperCard authoring system is a computer program that enables teachers or instructors, even teachers with minimal programming ability, to easily design their own hypermedia software programs for use in individualized situations. Teachers now have an easy method to teach, drill, remediate, or even test individual classes or students by designing software that targets these classes or individuals.

Introduction

HyperCard is an authoring system which makes it possible for nonprofessional programmers to create original working software applications. It is well suited for building customized personal information managers, educational tutorials, multimedia presentations, and user interfaces to other, less-friendly programs.

Setting Up to Design or Create Your Own Software Program

HyperCard has several "levels" that you can utilize in creating software. Since we will be authoring software and also writing our own scripts, we should select the highest or *scripting* level. To select this level:

- Double click on the HyperCard icon to open it.
- You will then see the Home Card. Click on the arrow in the bottom left of the card and you will see the levels-choice card. Click on level 5 and when it highlights, you will have set your HyperCard to the scripting level.
- Now, click on the arrow to the bottom right of the card and you will return to the Home Card. You only have to set this level once.

You are now ready to begin setting up you HyperCard.

- While in the Home Card, select *New Stack* from the FILE menu. In the resulting dialog box, type in a descriptive name for your stack under *New Stack Name*.
- Click on *Desktop* then double click on your data disk. This is where the stack will be saved automatically.
- Click on *New* and you will then see the first blank page or card of your new stack.
- You are now ready to begin designing your stack or software program.

Designing Your Own Software

Once you have completed the set-up for your stack, as described above, and your first blank card appears, a good idea is to place your tools palette in a convenient place on your screen. To do this, select *Tools* from the menu bar, drag through the palette, and place it in a convenient place. The tools palette, as shown in Figure 1, contains all the normal paint tools and also a browse tool, button tool, and a field tool.

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Figure 1: Tool Palette indicating the paint tools and the Browse, Button, and Field tools.

You can use the tools to add text to your cards, draw on the cards, add Art Bits to the cards, erase mistakes, add a pattern to your graphics, etc.

You may decide to design a background for your stack. To do this, select *Background* from the EDIT menu, design your background, then reselect *Background* to return to your card layer. The background you design will appear on every page/card of you stack unless you decide to change it later. You can add a border around the edge of each card, put your name on each cards, add a graphic to each card. Remember, what you put in the background will appear on each and every card in your stack.

Add Buttons to Your Stack

One of the most necessary aspects of your stack/program is to have a method by which students and "navigate" throughout the stack/program. To do this you must add buttons to each card/page. On these buttons you tell the program to go to the card you indicate.

To add a button to a card, click on the *Button Tool* on your tool palette then select *New button* from the OBJECTS menu. A "new button" icon will appear in the middle of you card and will have dashed edges. You can click on this icon and move it any where on the card.

Double click on the "new button" icon and you will see the dialog box as shown in Figure 2:

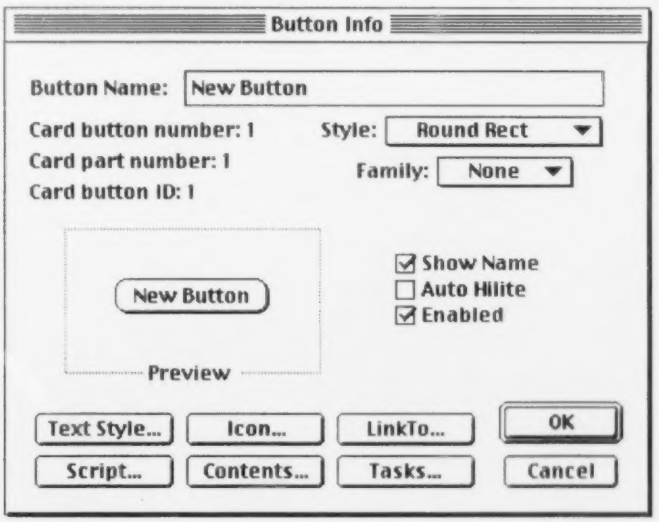

Figure 2: Button Dialog Box for Customizing and Linking Buttons.

As can be assumed from the above dialog box, you can give your button a name, choose a text style, select from numerous icons which turn your button from a round rectangle into a descriptive graphic, can select from a whole line of effects that will occur when the student clicks on the button, and most importantly, can link this card to any other card in the stack or to another stack.

Once you decide on a button style, click on OK and the newly designed button will appear on the card. You can resize it by clicking on the button, click on a corner, then drag it to any size you wish.

Notice that one of the choices from the dialog box is Script. HyperCard will automatically add the script to the buttons as you design and link your buttons but you do have the ability to add to that script to have the button play sounds, add 1 to a correct or incorrect field so the program will tell the student how many correct or incorrect answers s/he has clicked on in questions in the program, slow down or speed up the effects, etc., etc., etc.

Adding Fields to Your Stack

When you click on the "A" tool on your tool palette you will be typing in *bit-mapped text* onto your card. It is much easier to create a field and type into the field because this will add *word-processed text*. Word-processed text is much easier to work with and edit than drawn-in or bit-mapped text.

To add a field to your card, first select the *Field* tool from your tool palette and next select *New Field* from the Objects choice on the menu bar. A new field will appear in the middle of your card, also with a dashed-line outline as with a button. You can change the size of the field by the same method you changed the size of a button, by grasping a corner of the field and resizing by dragging.

Double click on the new field and a dialog box, similar to a button dialog box will appear as show in figure 3.

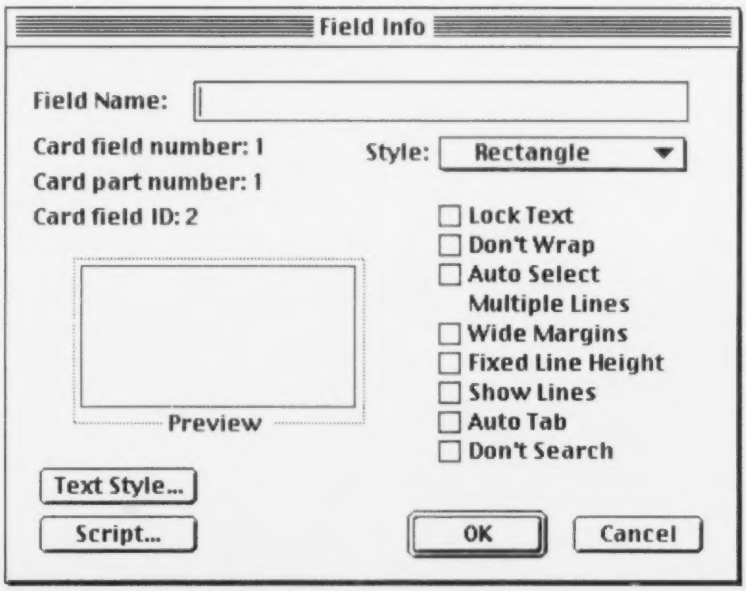

Figure 3: Field Dialog Box for Customizing Fields.

As can be seen, you can change the Text Style, Field Style, name the field, as you did with the buttons.

To type in the field, select the Browse tool from the tool palette, click in the field, and when a blinking cursor appears you can type in the field as with a word processor. You can always change the size of the field if you find you need more room to type in the information.

Adding Graphics to Your Program

Contained in you HyperCard program are a series of graphics that can be incorporated into you stack. You may have noticed this stack called Art Bits on your Home Card.

Procedure:

- Select *Home* from the GO menu; you will see the Home Card containing several special stacks.
- Click once on the Art Bits icon and an Art Bits icon menu will appear.
- Click once on the category you prefer (Beasts, Nature and Science, Transportation, etc.) and you will see the graphics for that category displayed on one or more screens.
- Determine which graphic you want than click on either the Capture tool or the Lasso tool and "capture" the graphic.
- Select *Copy* from the EDIT menu and the graphic will be placed on your clipboard.
- Select *Open Stack* from the FILE menu, locate your stack from the dialog box, then click on open or double click on the name of your stack.
- Find the card/page where you want to place the graphic and select *Paste Picture* from the FILE menu. The graphic will be copied to your page/card.
- Because the graphic will be placed on your card/page in "capture" mode, you can click on the graphic and drag it to where you want to place it on the page/card.
- You can also place graphics from another graphics package into your stack in a similar fashion.

Scripting in HyperCard

Your HyperCard program can be enhanced by scripting, that is writing sets of instructions, called scripts, to customize HyperCard's actions. Everything that happens in HyperCard is directed by a script. HyperCard scripts are written in HyperTalk language, which is very much like the language people use in daily life. Although HyperCard automatically scripts when you select tasks from the button or field dialog boxes, you can add much more power to your program when you add your own scripts. Following are several scripting sequences that you can add to your program.

Some basic assumptions for the following scripting examples:

- Card field "corr" indicates total correct answers.
- Card field "incorr" indicates total incorrect answers.
- Card field "percent" indicates percentage of correct answers.
- Card field "first" indicates a student's first name.
- Card field "both" indicates a student's first and last name.

To Ask the Name of A Student

You can have HyperCard ask the name of a student and display his/her name throughout the program. On the card where you want to ask for a name, select *Card information* from the OBJECTS menu. Click on the *Script* button in the dialog box and type in the following script:

```
on openCard
   global name
   ask "Please type in your first and last name."
   put it into name
   put first word of name into card field "first"
end openCard
```

To put the student's first name on the card where you first ask his name, select *New Field* from the OBJECTS menu and in the dialog box name the field "first" (without the quotation marks)

To Put First Name on Any Card

On any card where you want to put the student's first name, again select *Card information* from the OBJECTS menu, click on script, and type in the following script:

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```
on openCard
   Global name
   put first word of name into card field "first"
end openCard
```

As before, you must have a field on that card named "first" (without the quotation marks.

To Put the First and Second Name on Any Card

```
on openCard
   global name
   put name into card field "both"
end openCard
```

Again, you must have a field on that card named "both" (without the quotation marks"

Summary Card

You may have questions as part your program and would like to have students print out a summary card indicating how many they answered correctly and incorrectly and the percentage correct. To do this, you may design a summary card similar to Figure 4.

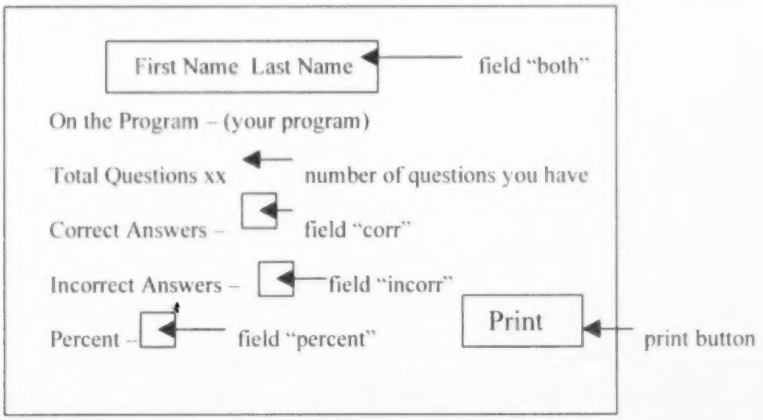

Figure 4 : Sample Summary Card

To add the numbers to the field corr and incorr, you must place the following scripts on each answer button you have in the program:

```
on mouseUp
   Add 1 to card field "corr" of card id xxxx (the card id of your summary card)
end mouseUp
```

```
on mouseUp
   Add 1 to card field "incorr" of card id xxxx  (the card id of your summary card"
end mouseUp
```

You'll also need to script the summary card so the percentage of correct answers can be calculated and placed in the field "percent". Use the following script on the card:

```
on openCard
   set numberFormat to "00."
    put card field "corr"/10*100 & "%" into card field "percent"
end openCard
```

As you can see, the number correct located in the field corr will be divided by the number of questions in your program (in this case 10), be multiplied by 100 and this number and the % sign will be placed into the field percent.

The Print button can be scripted easily:

```
on mouseUp
   doMenu Print Hypercard
end mouseUp
```

Other Scripting Possibilities

There are *many* other scripting features available to enhance your HyperCard stacks:

- An "answer" script where you can pose a question in the script, label the responses you want, and the program will automatically show a dialog box for the student where s/he clicks on an appropriate response. This is good for a 'do you want to go on' type of questions.
- A "wait" script where you indicate the time variable before some event happens in the program. Good or showing a field or a card for a length of time then hiding the field or linking to another card.
- A "mouseEnter" command where as soon as the mouse enters a field a specified event will occur. Good for giving 'hints' on questions.
- You can also script and use the if-then-else parameters, and others.

The scripting possibilities are almost limitless . . . but they take a little more time and, in some cases, more scripting expertise than is normally required.

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